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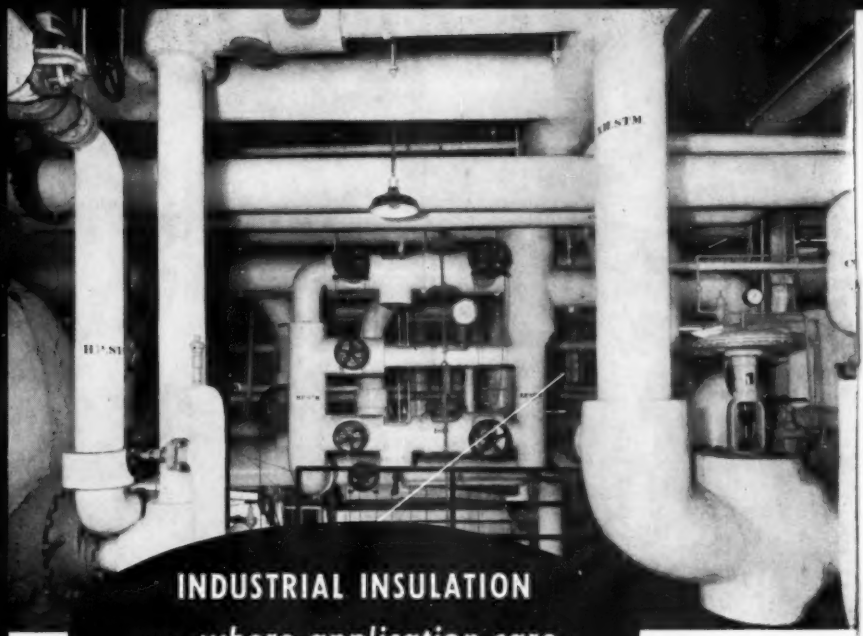
AUGUST 1954



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UTILIZATION AND AVAILABILITY OF ASBESTOS IN ELECTRIC INSULATION

By Oliver Bowles (Consulting Commodity Specialist, U. S. Department of the Interior, Bureau of Mines, Washington, D. C.)

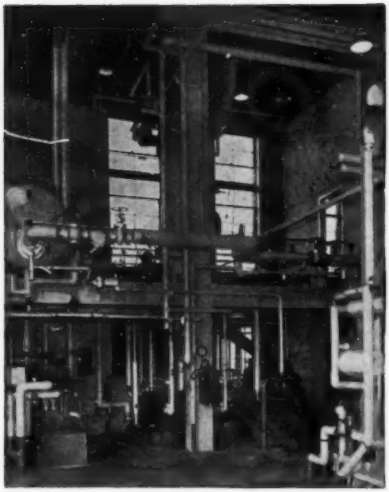
Asbestos holds an unique position in the mineral kingdom. It is a naturally fibrous mineral that has some of the characteristics of silk, cotton, or rayon but differs from them in that it will not burn. Because it combines the properties of an unburnable fabric with other advantageous qualities, asbestos has specialized uses for which no adequate substitutes are yet available. Asbestos furnishes raw material for a great variety of essential products, manufacture of which constitutes a vast industry. The value of asbestos products manufactured in the United States during 1947, the latest year for which statistics are available, exceeded $274,000,000.

Asbestos may be defined as a fibrous form of either serpentine or amphibole. The serpentine variety, named chrysotile ($3MgO, 2SiO_2 2H_2O$), is the principal variety of commerce. Amphibole varieties such as tremolite, anthophyllite, amosite, and crocidolite, are unimportant from the standpoint of electrical insulation.

Asbestos is a widely recognized building material in such products as asbestos-cement roofing and siding. It is well known as a constituent of heat-insulating and fireproofing materials, such as pipe and boiler covering. Asbestos theater curtains and automobile brake linings are uses with which the general public is also familiar. The role of asbestos as an electric insulator is less widely known, and yet it is in that particular field that a critical situation occurred during World War II and has continued into the present period of military preparedness (1).

Asbestos is not selected for electrical applications because of superior dielectric properties; many other materials are better insulators. It is selected because its fibrous form and fire resistance adapt it peculiarly in certain important insulating uses. Unfortunately, most of the asbestos of commerce has poor insulating properties.

Canadian chrysotile is eminently suited for nearly all



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major uses. Long, spinning grades make superior fabrics for brakebands, lagging cloth, and safety clothing. Shorter fibers are well adapted for building materials and heat-insulating products. However, for electric insulation — a small but important use — Canadian fiber is inferior because of its iron content.

The permissible iron content of asbestos for electrical insulation as given in Military Specifications MIL-I-3053A, dated August 3, 1951, is as follows:

Class	Maximum total iron, %	Maximum magnetic iron, %
2	2.5	0.75
4	4.0	2.0
6	6.0	4.0

Class 2 is intended only for special applications where the asbestos is of primary importance, such as electrical insulation on magnet wire, and certain tapes, sleeving, and cloth. Class 4 is intended for use where the asbestos is of secondary importance as an electrical insulator and where it is applied in combination with other materials of comparatively higher dielectric strength. Class 4 is suitable for cable coverings. Canadian asbestos in its natural state will rarely conform with the requirements of Classes 2 or 4. Class 6 is intended for use where the asbestos is of minor importance as a di-electric. Canadian asbestos will generally conform with the requirments of Class 6.

Only two areas in the world furnish marketable quantities of chrysotile satisfactory for Classes 2 or 4 electric insulation mentioned above: (a) the Shabani area in Southern Rhodesia, which furnishes chrysotile from which most of the iron can be removed with comparative ease and (b) an area north of Globe, Arizona, from which a naturally low-iron fiber is obtained. Southern Rhodesia was the mainstay of the United States during World War II for necessary supplies of low-iron asbestos, which was urgently needed for electric cable coverings, especially on warships. Since the war, the supply situation has become more and more acute because the U. S. is receiving less and less fiber from this source. This stringent supply is due to increasing requirements for the

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fiber by Great Britain and other countries, and to inability of the mines to meet all needs adequately.

It has been mentioned previously that Arizona produces the most beautiful low-iron chrysotile in the world, but the output is small. For cable covering the fiber must not only be low in iron but also must be of spinning length, 3/8-in. long or longer; only a small part of the output is of this grade. Furthermore, some of the fiber is too harsh and brittle for this exacting use. Moreover the deposits are scattered, and the fiber veins are commonly so discontinuous and widely spaced that mining costs are high. Even under stimulation, Arizona seems capable of producing only a few hundred tons a year of high grade fibers that will meet specifications, while United States needs are measured in thousands of tons.

The Arizona occurrence differs widely from the Canadian. All major chrysotile deposits of the world like the Canadian, consist of irregular crossfiber veins in massive serpentine. The deposits of Canada, Africa, and the Soviet Union cover large areas and extend to unknown depths. The Arizona deposits, on the other hand, occur as crossfiber veins in bedded limestones of limited thickness. Asbestos occurs only in the vicinity of diabase intrusions which evidently were factors in the origin of the fiber. Accordingly, such deposits tend to be restricted in size compared with the massive serpentine type.

In general, asbestos of the Canadian type contains considerable iron contamination. Asbestos deposits of Southern Rhodesia, which, as stated previously, are the principal sources of low-iron asbestos ,are of this type, and in their natural state the fibers contain several per cent of iron minerals. However, the iron is less intimately associated with the fibers than in other regions, and during the milling process most of the iron content is separated and removed. Contrasted with the occurrences in massive serpentine, deposits of the Arizona type, consisting of bedded veins in limestone, are generally very low in iron.

From the standpoint of electrical adaptability it appears, therefore, that the mass-serpentine types of de-

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posits, although large in extent, are generally inferior in quality, and the bedded-vein types in limestone are generally of good quality but of small size.

In its search for sources of low-iron fiber, the Bureau of Mines has given considerable attention to the potentialities of deposits in limestone. Such deposits are uncommon and widely scattered. Some are too small for use Their greatest development is in Arizona, and continued exploration may yet uncover deposits of moderate extent.

Similar deposits are known in other areas. One has been found at the top of a mountain in Death Valley, California, one in Madison County, Montana and one in Warren County, New York. Small loans from Defense Minerals Exploration Administration were expended in exploratory work on two of these deposits, but were found to be too small to merit commercial development.

Information has been assembled also on foreign deposits of this type. One such deposit exists at Lobatsi, Bechuanaland; one near Cuddapah, India; one at N'Cob, Morocco; and one in the Carolina district, Union of South Africa. None of them bears promise of substantial supplies. Recently information has been obtained that such deposits are known in Quebec, Canada, and steps are being taken to determine their extent and quality.

Important new discovery. — A recent development of unusual interest is the discovery of a large deposit of chrysotile asbestos of good spinning quality in northern British Columbia. It is now being developed by Cassiar Asbestos Corporation of Toronto. According to reports by the company and by other qualified observers, the percentage of long spinning fibers is unusually high. The deposit consists in part of a talus slope where large quantities of fiber lie exposd at the surface. The bedrock below the talus is said to be rich in fiber. Samples tested by an asbestos-textile manufacturing company in the U. S. were found to be of good spinning quality; iron content, after preliminary fiber preparation was found to be low enough for the material to qualify as a nonferrous fiber. A mill had been built and commercial production was begun last year.

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Certain handicaps must be overcome before the enterprise can be established on a sound commercial basis. The deposit is at 6000-ft. altitude in the far north where the climate is severe. Furthermore, the location is far from consuming centers, and transportation is hazardous and costly. Because of the large size of the deposit and the high quality of the fiber therein, this discovery ranks as the most important that has been announced during recent years. It is a promising source of low-iron asbestos.

Faced with a critical situation involving an increasing demand for a strategic commodity the supply of which is diminishing, both the U. S. Government and industry have recognized the urgency of seeking a solution to the problem. The four following lines of approach are available: (a) active measures to secure larger supplies of low-iron asbestos; (b) development of methods for removal of iron from high-iron fiber to a point where it will satisfy low-iron specifications; (c) development of substitutes for low-iron asbestos; and (d) manufacture of low iron asbestos by synthetic processes. Work has been done in all of these fields, during recent years, and the accomplishments and present status of the problems are outlined below.

Steps to increase supply. — The Defense Minerals Exploration Administration has made loans on a cooperative basis to several companies for exploratory work in Arizona in the hope that larger supplies of soft spinning fiber may become available. Several projects are under way, but no results of promise are yet available. The Bureau of Mines Experiment Station at Tucson, Arizona, is assisting operators. Private industry is also carrying on exploratory and development work in Arizona.

The DMEA has also made loans for work on undeveloped asbestos deposits in California and other states. These projects have as yet yielded small returns.

As mentioned previously, the Bureau of Mines is alert in following up all information that becomes available on low-iron asbestos deposits anywhere in the world.

Efforts have been made both by government and industry to procure larger supplies from the single produ-

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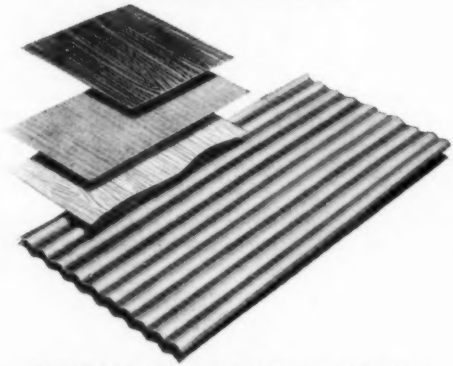

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cer of low-iron chrysotile in Southern Rhodesia, but very little success has yet been attained. Several new operators are coming into production in Southern Rhodesia, and, although little is known of the quality of their products, they are potential supplementary sources.

De-ironing high-iron asbestos — Since the objection to Canadian asbestos for electrical uses is its high iron content, an obvious solution of the problem is removal of the iron. This, however, is difficult because the iron minerals are very intimately associated with the asbestos; part of the iron content may, in fact, be intergrown with the fibers. Two asbestos companies have devoted much research to this problem. The Johns-Manville Company has conducted research for some years on de-ironing short-fiber Canadian chrysotile and now operates a mill at Tilton, New Hampshire, for making a series of products known as QUINTERRA papers (2). These products are applied to certain electric-insulation uses. Raybestos-Manhattan, Inc., of Manheim, Pennsylvania, has conducted research on de-ironing long-fiber Canadian chrysotile and has made a series of low-iron papers and tapes having the trade name Novabestos. The General Electric Company has also developed a process for removing conducting particles from asbestos and has used the purified fiber for making an inorganic paperlike sheet known as "Terratex" (3), suitable for certain high temperature electric-insulation uses. Neither QUINTERRA, Novabestos, nor Terratex has yet attained wide enough acquaintance to permit its substitution for standard low-iron fibres imported from Southern Rhodesia in their major insulating applications.

The Naval Research Laboratory has made some progress in de-ironing Canadian fiber by means of a papermaker's Vortrap. Essentially, the separation is effected by the swirling action that results when rapidly flowing water is introduced into a pipe in a tangential direction. Centrifugal force tends to throw the heavy magnetite against the walls, where it settles to an outlet, while the asbestos fibers, freed to some degree from magnetite, pass upward by countercurrent to the center of the pipe.

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In cooperation with the Bureau of Mines, the Naval Research Laboratory obtained a 500-lb. sample of spinning fiber from Canada, and tests were run on a commercial-size Vortrap at the National Bureau of Standards Results were unsatisfactory because the asbestos had not been disintegrated enough to unlock the magnetite from the fibers. To overcome this difficulty, the Bureau of Mines obtained other samples from Canada and had them prepared at an asbestos-textile plant, where they were passed through breakers, graders, and carding machines. It was presumed that such treatment would release the magnetite grains from the fibers to such an extent that Vortrap separation would be more successful. Prepared samples were then passed through the Bureau of Standards Vortrap, and the resulting asbestos paper appeared to be uniformly white and almost free from magnetic grains. When analyzed, however, it was found that, even after three passages through the Vortrap, the iron content of the paper was still undesirably high. Evidently the magnetite is in very fine grains that adhere to, or become so entrapped in, the fiber that their removal is difficult.

The Bureau of Mines has undertaken a limited program of investigation in this field, which, it is hoped, will solve some of the problems of iron removal.

Developments of substitutes for low-iron asbestos — Remarkable progress has been made during recent years in fiber glass manufacture. Certain glass yarns and tapes are satisfactory substitutes for asbestos in some applications. Glass fibers have satisfactory dielectric properties, but they lack certain physical and chemical properties of asbestos. Glass fibers are used to some extent in conjunction with, or as substitutes for, asbestos in Navy cable insulation, but in general they are inferior to asbestos in resistance to high temperatures, flexure, and chemical reaction. Recently an aluminum silicate fiber, known as "Fiberfrax," has been announced by the Carborundum Company. It is blown by steam or compressed air after fusion with an electric arc. Fibers will withstand temperatures as high as 2300°F., but no information is yet avail-

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able on their merits as substitutes for low-iron asbestos in electric insulation. Hydrous calcium silicate is another recent substitute. So much progress is being made in the manufacture of glass and related fibers that their increasing substitution for asbestos in electric insulation is to be expected.

Manufacture of synthetic asbestos—If asbestos could be synthesized, its iron content could of course be definitely controlled. Asbestos synthesis has been attempted by several government and industry-sponsored laboratories (4-6), but no commercial success has yet been achieved. The Electro-technical Laboratory of the Bureau of Mines at Norris, Tennessee, has made considerable progress in the synthesis of amphibole asbestos. Fibers are weak and brittle, and research is being conducted on methods of improving their quality. This type of asbestos has limited commercial use and has no place at present in the electric insulation field. Chrysotile has been synthesized in several laboratories, but the fibers made are so small that they can be seen only with an electron microscope. Their elongation from that stage to fibers of spinning length is a long, tedious process. The problem is worthy of continuance in a long-range research program, but no results of practical value are to be expected in the near future.

According to information now at hand, the most promising solution of the problem of short supply is a probable increase in available quantities of asbestos, the iron content of which is low or can easily be reduced. The British Columbia deposit and others now in prospect offer reasonable hope of larger supplies. Next in importance is the de-ironing of Canadian asbestos. Development of satisfactory substitutes is of almost equal rank, while synthesis is the least promising. The instability of the situation is manifest. New factors may appear at any moment, and the avenues of approach that seem most promising today may become subordinate tomorrow.

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(Reprinted from Journal of Electro Chemical Society, Vol. 101, No. 3, March 1954.)

THE RUBEROID CO.

Improvements at The Ruberoid Co.'s asbestos mine at Eden, Vermont, the largest of its type in the United States, indicate that progress did not stop when a modern, new mill went into operation in 1949.

To streamline materials handling last year, General Manager Michael J. Messel installed a compression packer for packaging asbestos fibre in paper bags. This idea is not new, but Ruberoid's technique appears to be the most successful yet tried. The machine, jointly developed by the company and Union Bag & Paper Company, fills a hopper by means of two speed-controlled screw conveyors to a specified weight. Then a piston crams the fibre into a bag. The bag is held open within a steel cylinder to prevent splitting or tearing in the process. In the short time the device has been in use, it has resulted in easier handling and a reduction of more than 25% in warehousing and shipping space.

In another move, management recently opened a new bit sharpening shop. The up-to-date facility, built around modern, automatic equipment, eliminates dependence on hand skills. It can sharpen enough drill bits in an 8-hour day to supply three shifts.

Early this year, work was completed on a separate maintenance building where automotive equipment can be serviced on a formula basis.

These changes and additions were made in accordance with the long range plans for the new mill. The

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master design was based on practices tried out for years at the company's Eden plant (ASBESTOS, Sept. 1933) and from a study of Canadian methods. Staff-designed, the six-story mill building is built of structural steel with a concrete main floor, foundations and footings. It has 65,000 sq. ft. of floor area. The plant houses a complete laboratory and there are also a modern, full-equipped machine shop and maintenance facilities. The corrugated asbestos-cement siding and roof used on the building are Ruberoid products.

Originally, plant and workings were near the top of the south side of Belvidere Mountain. Some years ago, management realized deposits there were limited and a search was made for new deposits of higher grade ore, which were found at the present location.

Company holdings were increased to 3,000 acres and an extensive prospecting and exploration program was initiated. When it became certain that the new ore bodies were of sufficient extent and quality, plans for the erection of the new mill were put into effect.

Today, quarry operations at the open pit mine are confined to the north slope of Belvidere Mountain, which lies in Lowell Township. The ore body being worked is 3,000 feet long and 400 to 800 ft .wide, with a sloping surface from the 1,400 ft. to the 1,000 ft. level. Pits at four levels are now in operation.

In line with the company's long range policy and planning for the distant future, operations are rotated to assure maximum quantity output and a more uniform ore mixture. To speed this practice last year, a crushing plant was moved from the 1,300 ft. level to the 1,050 ft. level. Another crushing plant is at 1,175 ft.

A dramatic sight at the mine is the work of huge power equipment. One Marion shovel, one of the largest in New England, is an electrically-driven giant capable of lifting 7 cu. yards of rock (about 10 tons) at a bite. This is one reason why the Vermont mill's capacity is 100 to 125 t.p.h. of raw ore. It helps account for the sizable jump asbestos output has taken in recent years. The mine produces 96 per cent of the chrysotile asbestos produced in this country.

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MARKET CONDITIONS

GENERAL BUSINESS.

According to many indices and the observations of well regarded students of the economy the corner has been turned and continued improvement in general business is expected for the balance of this year. The stock market continues to reach new highs almost daily indicating a feeling of confidence in the general situation. Construction and rtail trade continue to lead the parade. Up to now steel production has not improved substantially and many smaller producers of metal products are experiencing very poor business. Farm income leaves something to be desired and this has been reflected in slow sales of farm implements. Larger, more expensive, items of consumer's hard goods are also moving slowly, and price reductions are general in many lines. Our view is that most markets will remain very competitive for some time to come and the major share of such markets will go to the more efficient producers and particularly to those whose research and development programs enable them to offer better products at lower prices than their competition can offer.

ASBESTOS — RAW MATERIAL

Asbestos fibre production and sales are running at a fairly level rate in line with shipments since March.

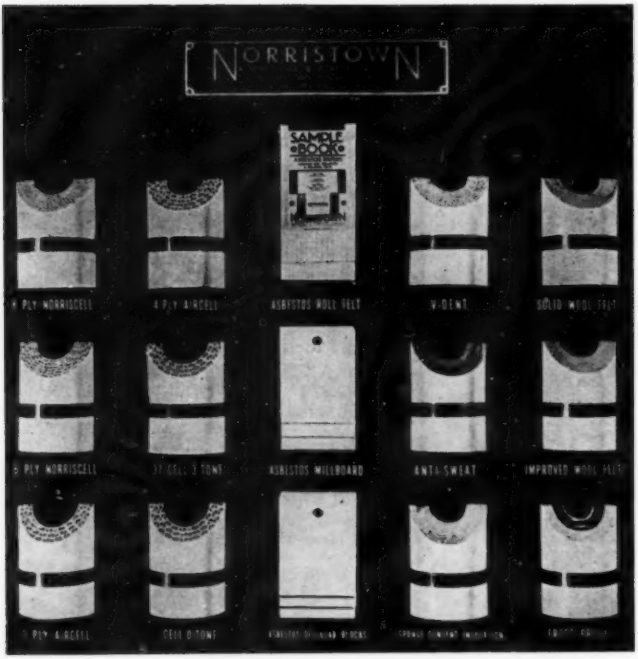
The output and deliveries are from eight to ten per cent below corresponding period of last year.

All grades are in ample supply and at the present rate of industrial activity, the asbestos production is capable of handling a substantial increase.

ASBESTOS — MANUFACTURED GOODS.

Asbestos Textiles All phases of Asbestos Textile business is suffering from lack of demand. This condition is generally prevalent on cloths as well as tapes. The outlook is poor as there does not appear to be optimism in the equipment field from which a good part of the textile business originates.

Asbestos Brake Lining. The brake lining market is remaining steady. Replacement market looks as though it



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will continue at the same level, while automotive equipment market is tapering off for model changes.

Asbestos Paper. The demand for paper remains steady, although at a reduced level from that of previous high. As a result, competition for available business is keen. There is a fair demand for *Millboard* but competition is very keen to obtain any sales that are available. Industrial Construction is down and most of the work is maintenance work and at the present time demands for *Saturated Paper* are not as great as production.

Insulation. High Pressure. Demand at present is very low. There are, however, some prospects of improvement as more inquiries are being received for work to b done the latter part of this year and the early part of 1955. The outlook is only fair as backlogs have shrunk during the past several weeks and there have not been sufficient new inquiries to cause a feeling of optimism for the last of the year.

Insulation. Low Pressure. At present business is a little slow as a number of the larger public housing developments have not been ready for insulation. Business is expected to improve during the latter part of the year as developments are ready.

Asbestos Cement Products. This market is slightly below normal and volume is off for the year.

The market for roofing and siding is just about the same as it has been for the past two months, improvement in demand for glazed siding.

Due to the lack of new construction the demand for corrugated and flat has been considerably below production.

There appears to be relatively little change in the market for the various A-C pipe products.

The above comments have been made by various informed executives in the Industry. All comments are welcome.

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70 Pine Street

New York 5, New York

**One of the NICOLET Industries*

BUILDING

The Dodge Reports of contracts for future construction in the 37 states east of the Rockies again smashed records in June after breaking numerous other monthly records within the past year, according to F. W. Dodge Corporation.

The total of $1,733,264,000 was the highest for any of the 63 Junes in Dodge's history and was 43 per cent ahead of June 1953.

It rounded out the highest first half of any year with a total of $9,251,149,000, up 17 per cent from the first six month of 1953. It narrowly missed topping the total for the last six months of 1953, which was Dodge's biggest half-year.

The average monthly contract total for the first six months was $1,542,000,000. The last six months need average only a trifle above $1 billion to equal the all-time yearly high of $17,443,463,000 set in 1953. The Dodge grand total for the 37 eastern states has not fallen below $1 billion since February 1952.

The June total construction figure was 10 per cent behind May. June nonresidential awards of $656,445,000 were 2 per cent below May but 43 per cent above June 1953; residential awards were $720,266,000, down 13 per cent from May but 56 per cent above June 1953; heavy engineering, $356,553,000, down 17 per cent from May but 24 per cent above June 1953.

Individual six-month 1954 totals compared with the like period 1953 were:

Nonresidential, $3,408,009,000, up 15 per cent; residential, $3,980,691,000, up 22 per cent; heavy engineering, $1,862,449,000, up 10 per cent.

High rates of activity in construction contract awards for commercial buildings, single-family homes, and schools, were among the outstanding trends in the first half of 1954, according to a midyear review by Dr. George Cline Smith, economist for F. W. Dodge Corporation.

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SERVING THE SOUTHWEST

FIFTIETH ANNIVERSARY FOR SCANDINAVIA BELTING CO.

In the year 1878 when an Englishman and a Scotsman went fishing in the waters of Sweden, neither dreamed that their chance encounter would result in an American company celebrating its Golden Anniversary in the year 1954.

There is no record of how many fish were caught by Messrs. Fenton and Cobbett, but the resulting partnership grew into British Belting and Asbestos, Ltd., which subsequently established an American branch that was officially incorporated in May 1904. Thus it happened that Scandinavia Belting Company, with headquarters in Newark, New Jersey, and a plant in Charlotte, North Carolina, is celebrating its Golden Anniversary. Actually, SCANDINAVIA had been engaged for some years in the American market before it was incorporated.

The common interest that led to the partnership between Messrs. Fenton and Cobbett was a desire to improve fabric belts for driving machinery. In 1878, these belts were merely canvas plies either stitched or glued together. William Fenton invented a woven belt that gave far superior performance. With a few looms, the company started operating in 1882, and for want of a better brand name, called its product SCANDINAVIA, whose only descriptive connotation referred to the geographical spot where the partnership had its origin. Even today many people are surprised to find that the Scandinavian Belting Company has nothing whatever to do with any of the Scandinavian countries.

The manufacture of conveyor and transmission belts inevitably led to extensions in the automotive field, when the company began to produce woven clutch liners. Among the companies which adopted this product was the famous Rolls-Royce Motors. But it is significant that SCANDINAVIA'S fame got a really big impetus when it became synonomous with that of another famous motor car, albeit of a much more popular price level, notably the Ford Model T. SCANDINAVIA's transmission lin-

ings for the Model T were so uniformly excellent that the Ford Motor Company bought millions of feet as original equipment for its cars. It is to the great credit of the Ford Company that even today, a good quarter century after Model Ts were discontinued, small orders still come to SCANDINAVIA for linings.

The first home of SCANDINAVIA was in Boston, Mass., where it imported the products of the parent organization. In 1923 it opened a factory in Paterson, New Jersey. However, in 1926 the company moved to its own modern American factory in Charlotte, North Carolina, in order to be closer to its sources of raw materials.

As was the case with many manufacturers, a large part of SCANDINAVIA plant production was given over to the war effort, when it was called upon to produce brake linings for military, aircraft, and marine equipment. SCANDINAVIA brought to this work its accumulated experience in pioneering heavy duty linings for

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giant tractor-trailers. SCANDINAVIA's ZT Heavy Duty Lining is widely used on heavy and light trucks, including many commercial fleets and bus lines throughout the country. The company of course also makes a full range of passenger car linings.

The big news in SCANDINAVIA's belting division revolves about SCANDURA, a new P.V.C. coated conveyor belting which is arousing keen interest on many types of application. SCANDURA eliminates the fire hazard in coal mines resulting from conveyor belt failures. It has been reliably established that some 12% of all mine fires are caused when belts stall and the driving pulleys continue pulling, thereby building up friction. SCANDURA, being fireproof, prevents such mishaps. It is also reported to have wearability and temperature features not found in other belts. SCANDURA was developed in England in 1946 and widely tested in coal mines in the United Kingdom before the Charlotte plant undertook its manufacture for the United States.

The management intimates that other developments of commercial significance are in the formative stages in both the automotive and belt divisions of the company.

AUTOMOBILE SALES

	June 1954
Passenger Cars	507,055
Motor Trucks	91,442
Motor Coaches	350
	598,847

In June 1953, a total of 661,992 motor vehicles were sold. In the six months of 1954 the total was 3,537,452.

These figures were supplied by the Automobile Manufacturers Association, New Center Building, Detroit, Michigan.

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In Canada

CAPE ASBESTOS (Canada) Ltd.

200 Bloor Street East, Toronto, Ontario

Canada

(Department of Mines, Province of Quebec)

Tons 2000 lbs.

Production for May 1954	78,137 tons
Compared with May 1953	80,238 tons

Dominion Production for May 1954 is 79,709 tons, a difference of 1,572 tons, from the Quebec figure.

Africe (Rhodesia)

(Published by Rhodesia Chamber of Mines)

Tons 2000 lbs.

Production for March 1954	6,873.20 tons
Valued at	£510,625
Production for March 1953	7,161.12 tons
Valued at	£565,292

French Morocco (From Mineral Trade Notes, May 1954)

Output of asbestos at the Societe Miniere de Bou et du Graara; Bou Offroh totaled 544 metric tons in 1953, with stocks of asbestos totaling 267 tons on January 1, 1954, compared with stocks of 181 tons on January 1, 1953. No production was reported for the Societe Miniere du Siroua N'Kob deposit for 1953 and no stocks on January ,1 1954, although stocks of 2 tons were reported on January 1953. The latter operation is still in the stage of prospecting and developing.

Kenya (From Mineral Trade Notes, May 1954)

Production of asbestos of unstated variety totaled 150 long tons valued at £2,864 in 1953. This a decrease of 198 tons, compared with the 1952 production of 348 tons.

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Man thoroughly experienced in manufacture and production of Asbestos Cement Products, particularly Siding Shingles and similar products. To man who qulifies a permanent connection with good remuneration and excellent opportunity for advancement will be offered. Address: Box 8C-C, "ASBESTOS" 808 Western Saving Fund Bldg., Phila. 7, Pa.

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South African and Rhodesian

Asbestos Fibres

ENQUIRIES WELCOME

Imports into U.S.A.
(Figures by Bureau of Census)

	March 1954 Tons (2240 lbs.)
Unmanufactured Asbestos—By Countries:	
From Canada	52,390
Union of South Africa	1,221
Southern Rhodesia	282
So. B. Africa	152
Other Countries	47
	54,092
Valued at	$5,219,890
By Grades:	
Crude No. 1, Chrysotile, Canada	24
Crude No. 1, Chrysotile, Other Countries	3
Crude No. 2, Chrysotile, Canada	31
Crude No. 2, Chrysotile, Other Countries	13
Crude, Other, Chrysotile, So. Rhodesia	251
Crude, Other, Chrysotile, So. B. Africa	152
Crude, Other, Chrysotile, Other Countries	25
Crude, Blue, Union of S. Africa	(2)
Crude, Amosite, Union of S. Africa	595
Textile Fibres, Chrysotile, Canada	1,858
Shingle Fibres, Chrysotile, Canada	7,807
Paper Fibres, Chrysotile, Canada	4,424
Other Fibres, Chrysotile, Canada	38,246
Other Fibres, Chrysotile, So. Rhodesia	31
Other Fibres, Chrysotile, Other Countries	6
	54,092

Manufactured Asbestos Goods:	March 1954 Quantity (lbs.)	Value
Asbestos Yarn, United Kingdom	87,173	$ 66,463
Asbestos Yarn, Other Countries	1,000	1,300
Asbestos Packing & Lining, Canada	23,692	29,552
Asbestos Packing & Lining Other Countries	5,836	1,370
Asbestos Shingles, (Impreg.)	2,688	392
Asbestos Shingles, (Not Impreg.)	8,320	441
Asbestos Manufactures—Others	....	8,818
	128,709	$108,336

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Your inquiries for additional information are welcomed

Exports from U.S.A.
(Figures by Bureau of Census)

	April 1954 Tons (2240 lbs.)	Value
Unmanufactured Asbestos:		
To: Europe	46	$ 3,802
Other Countries	65	5,736
	111	$ 9,538

Manufactured Asbestos Goods:

	April 1954 Quantity		Value
Asbestos Pipe Covg. & Cement	Lbs.	639,503	$ 122,333
Asbestos Textiles & Yarn	Lbs.	116,757	140,554
Asbestos Packing	Lbs.	359,121	189,232
Asbestos Clutch Facings	No.	127,181	114,381
Asbestos Bk. Lng. (Mld.&S.Mld.)	Ft.	255,753	84,769
Asbestos Bk. Lng. (Woven	Lin. Ft.	50,701	34,813
Asbestos Brake Lining Sets	Lbs.	570,810	504,122
Asbestos Construction Materials	Lbs.	2,034,086	191,664
Asbestos Manufactures—Others			61,933
			$1,443,801

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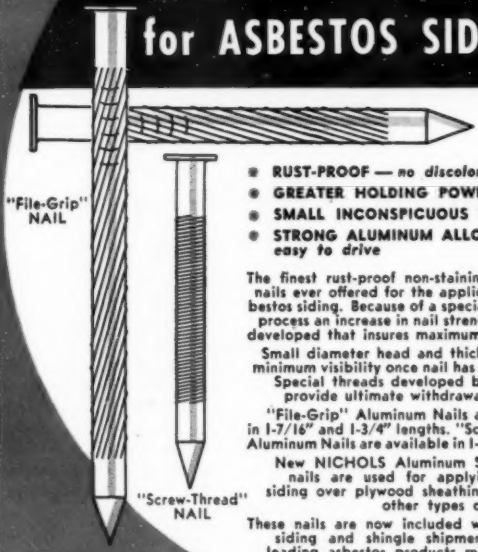

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The finest rust-proof non-staining aluminum nails ever offered for the application of asbestos siding. Because of a special NICHOLS process an increase in nail strength has been developed that insures maximum drivability.

Small diameter head and thickness assures minimum visibility once nail has been driven. Special threads developed by NICHOLS provide ultimate withdrawal resistance.

"File-Grip" Aluminum Nails are available in 1-7/16" and 1-3/4" lengths. "Screw-Thread" Aluminum Nails are available in 1-1/8" lengths.

New NICHOLS Aluminum Screw-Thread nails are used for applying asbestos siding over plywood sheathing and many other types of new work.

These nails are now included with asbestos siding and shingle shipments of many leading asbestos products manufacturers.

Write for free samples and descriptive literature. Address Dept. A.

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GENERAL OFFICES & FACTORY—DAVENPORT, IOWA
Branches: Mason City, Iowa; Battle Creek, Mich.; Cincinnati, Ohio; Atlanta, Ga; Danbury, Conn.; Seattle, Wash.; Oakland, Calif.

Exports from Canada

(Published by Dominion Bureau of Stastics)

Unmanufactured Asbestos	May 1954 Tons (2000 lbs.)	Value
Crude		
United States	52	$ 32,084
United Kingdom	....	....
South America	....	....
Central America & Mexico	....	....
European Countries	47	46,021
Other Countries	....	....
	99	$ 78,105
Milled		
United States	12,782	$2,020.760
United Kingdom	3,399	609,140
South America	2,059	376,119
Central America & Mexico	580	87,889
European Countries	10,728	1,951,790
Other Countries	4,082	627,760
	33,630	$5,672,458
Shorts		
United States	41,363	$1,964,941
United Kingdom	3,180	127,768
South America	448	29,721
Central America & Mexico	....	....
European Countries	7,225	512,931
Other Countries	1,296	99,615
	53,512	$2,734,976
Grand Total—Unmanufactured Asbestos	87,241	$8,485,539
Manufactured Asbestos Goods:		
Brake Lining		$ 29,007
Packing		....
Other Materials		70,856
		$ 99,863

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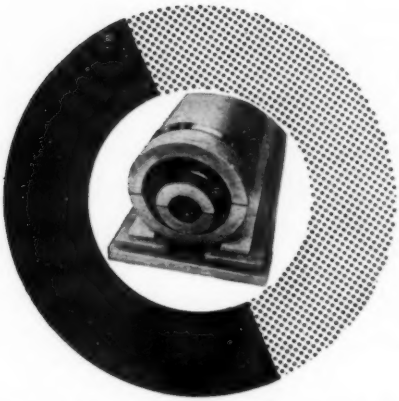

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NEWS OF THE INDUSTRY

HAPPY BIRTHDAY

Herbert E. Smith, Retired, Chairman, U. S. Rubber Co., New York City, August 16.

C. B. Pooler, Vice President, The Philip Carey Mfg. Co., Cincinnati, Ohio, August 18.

R. J. Tobin, Chairman, Tilo Roofing Co., Stratford, Conn., August 18.

Carl W. Lemmerman, President, Homestead Corporation, Hartford, Conn., August 19.

Harry Coombs, Works Manager, Beldam Asbestos Co., Ltd., Hounslow, England, August 20.

C. H. Carlough, President, Carolina Asbestos Co., Davidson, N. C., August 20.

P. E. Coombs, Director & General Manager, Uxbridge Flint Brick Co., Uxbridge, Middx., England, August 21.

Melvin A. Jackson, Vice President, Grant Wilson Inc., Chicago, Ill., August 22.

Matthew Balich, President, Matthew Balich Corporation, New York City, August 29.

George Robinson, Secretary, Johnson's Co., Thetford Mines, Canada, August 30.

A. W. Swartz, President, Linear Packing & Rubber Co., Philadelphia, Pa., August 31.

John P. Syme, Vice President, Johns-Manville Corporation, New York City, September 1.

W. D. Pardoe, Vice President, Thermoid Company, Trenton, N. J., September 8.

Abbott Coburn, President, Globe Roofing Products Co., Inc., Whiting, Ind., September 9.

Pierre E. Donellon, Vice President, Charge of Construction, Tilo Roofing Co., Stratford, Conn., September 9.

K. R. MacDonald, Director of Purchases, The Ruberoid Co., New York City, September 10.

J. Gillmur Tyson, Jr., President, Consolidated Asbestos Corporation, Sellersville, Pa., September 14.

R. J. Berry, President, Standard Asbestos Mfg. Company, Cleveland, Ohio, September 15.

To all these gentlemen we extend congratulations and best wishes on the occasion of their birthdays.

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Three years ago Carey Mfg. Company acquired the facilities of The Asbestos Company of Texas, Houston, Texas, producers of asbestos-cement shingles. They have since enlarged and improved this equipment and added substantially to the product lines available from this plant. A modern roofing plant and warehouse are now in operation at this location.

Carey's new Atlanta, Georgia, warehouse has recently been completed and is stocked with a broad line of asphalt and asbestos products. Thus, they are in a position to grow with the great southern and southwestern markets. Customers can select from a complete line of building materials—buy from one source and be assured of prompt service and truck delivery in a wide area. Promotion directed to these markets is effectively telling the story of these new facilities, broad product lines and service.

A.S.T.M.—Annual Meeting

Featured by 36 technical sessions at which were presented 110 technical papers covering various aspects of engineering materials, the 1954 Annual Meeting of the American Society for Testing Materials, held throughout the week of June 13 at Chicago, also included 600 meetings of the technical committees.

Including the 1954 Annual Meeting actions there are now about 2120 ASTM Standards. This compares with the figure twenty years ago of 730 and ten years ago, 1944, of about 1280. These figures indicate a definitely increased tempo in standardization activities during the last decade.

Norman L. Mochel, Manager, Metallurgical Engineering, Westinghouse Electric Corp., Lester Branch P. O., Philadelphia, Pa., was elected President for 1954-1955, succeeding Leslie C. Beard, Jr., Assistant Director of Socony-Vacuum Laboratories, Socony-Vacuum Oil Co., New York, who continues on the Board of Directors as Past-President for three years.

The 1955 Annual Meeting of the Society will be held from June 26 to July 1, inclusive, 1955, at the Chalfonte-Haddon Hall in Atlantic City.

THE RUBEROID CO.

Semi-Annual Report

Sales for the first six months of this year were slightly lower than for the same period in 1953. Net sales for the first half were $35,370,399 compared to $36,065,368 for the same period last year, a drop of 1.9 per cent. Net earnings after taxes were $1,968,388, against $2,170,760 in 1953.

Earnings per share amounted to $1.41 on the basis of 1,397,380 shares, (the average number outstanding during the first half of 1954). On a comparable basis, the net earnings for the first half of 1953 were $1.58 per share on 1,371,714 shares.

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FRICTION MATERIALS STANDARDS INSTITUTE, INC.

Annual Meeting—Election of Officers

At the Annual Meeting of the Friction Materials Standards Institute, Inc., held on June 23, 1954, the members elected the following officers for the year starting July First:

President—*Frederick C. Weyburne*, Marshall-Eclipse Division, Bendix Aviation Corporation.

Vice-President—*William J. Nanfeldt*, World Bestos Corporation.

Treasurer—*Vincent A. Spina*, Scandinavia Belting Company.

Secretary—*Miss Harriet G. Duschek*.

Other members of the Board of Directors, serving with these officers are:

John R. Heath—Grizzly Mfg. Company.

William J. Vachout—Molded Materials Division, Carlisle Corp.

Franklin A. Miller—Raybestos-Manhattan, Inc.

Howard N. Wilhelm—RiteSet Mfg. Company.

Leo S. Sullivan—Russell Mfg. Company.

UNION ASBESTOS & RUBBER CO.

Heating & Cooling Division

Sebree-Huff Equipment Company of Albuquerque, New Mexico, has been appointed sales representative for "Unarco" heating and air conditioning units.

George M. Sebree first organized his own company in Albuquerque in 1946. Early this year he formed a partnership with James M. Huff who had been branch manager for the Western Air and Refrigeration Corporation. Both Sebree and Huff are widely known in the building, heating and cooling trades. They will represent Unarco heating and cooling products in northern New Mexico.

Avery M. Walsh and Sons, East Greenbush, New York, has been appointed sales representative for "Unarco" heating and air conditioning equipment for Albany and the eastern New York area.

Originally an asbestos insulation contractor, Avery Walsh organized his present firm in Albany 20 years ago and, with his two sons, Harold and Robert, is widely known in the heating and ventilating business.

PLANT INSULATION COMPANY

The Plant Insulation Company, distributors and contractors of Industrial Insulations for all temperatures and services, is now occupying their new building at 2741 South Yates Ave., Los Angeles 22, California. (See their adverisement on page 27).

The warehouse covers 24,000 sq. ft., and the office building 4,000 sq. ft. with a yard area of approximately 20,000 sq. ft.

K. M. Glasoe, Jr. is President of the Company and *Vernon V. Schultz*, Vice President and Sales Manager.

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Kuruman Cape Blue Asbestos Co.

Baboon Asbestos Co.

Harteskloof Asbestos Co.

Springbok Asbestos Co.

EVERITE (PTY) LTD.

A very attractive and instructive set of catalogs, in a loose leaf type of binder, has reached us from Everite (Pty) Ltd., P. O. Kliprivier, Transvaal, S. Africa, manufacturers of asbestos-cement products for Mining, Industrial, Agricultural and Domestic uses. Each catalog gives full description of the product and is beautifully illustrated.

With the catalogs we received the first two numbers of their bi-annual publication, "Everite News"; the second edition describing their new Head Office. The building and factory stand on twenty-five acres of flat ground adjacent to the Kliprivier Station and is laid out with lawns and gardens.

A recent development of Everite (Pty) Ltd. was the installation, at their two factories, namely Kliprivier, Transvaal and Brackenfel, Cape, of a 10,000 ton press. These presses were installed for the purpose of manufacturing "Flexite" Asbestos-Cement Cellulose Sheets, Pressed Flat Sheets and Pressed Slates.

FLEXIT sheets meet the demand for a low cost, fire resistant Building Board for all internal uses, is made from asbestos-cement cellulose, and is used for ceilings, panelling & partitions, counters, cupboards and shuttering.

EVERITE Pressed Flat Sheets are particularly suitable for louvre blades, sunshields, cladding and partitioning. One of the first orders for Pressed Flat Sheets was some 200,000 square feet of half inch reinforced with chicken wire, and was used for lining ventilation shafts in the Free State Mines in the Orange Free State.

UNITED STATES RUBBER CO.

William M. MacMillan has recently been appointed manager of sales promotion and advertising for the textile division, United States Rubber Co.

Among the products manufactured by the textile division are consumer fabrics, tufting and knitting yarns, synthetic industrial yarns and fabrics, tire cord, hose and belt duck and asbestos products.

Prior to joining U. S. Rubber, Mr. MacMillan was with Deering Milliken & Co., Inc. in advertising and sales promotion for the men's wear division.

A.S.H.V.E.

The appointment of *Elmer R. Kaiser*, Columbus, Ohio as the new Director of Research for the American Society of Heating and Ventilating Engineers has recently been announced by Louis N. Hunter, President.

Mr. Kaiser was appointed to the post by the ASHVE Council and will assume his new duties at the Society Research Laboratory, Cleveland, Ohio, about September 1st.

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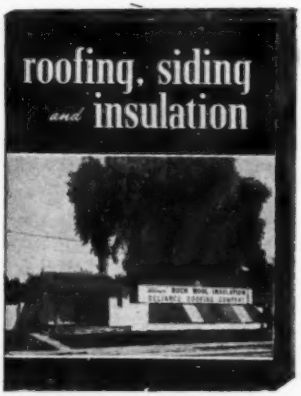
NEW YORK 7, NEW YORK



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Australia — Statistics

(Published by Bureau of Mineral Resources, Geology and Geophysics, Ministry of National Development).

	Quarter Ending Dec. 31, 1953	Year 1953
Production	Tons 2240 lbs	
Crocidolite	890 tons	3,795 tons
Chrysotile	299 tons	1,174 tons
	1,189 tons	4,969 tons
Imports		
Amosite	1,482 tons	7,839 tons
Chrysotile	6,002 tons	17,868 tons
Crocidolite	203 tons	553 tons
Other	12 tons	206 tons
	7,699 tons	26,466 tons
Exports		
Belgium	37 tons	243 tons
U. S. A.	917 tons	1,649 tons
Other Countries	171 tons	411 tons
	1,125 tons	2,303 tons

Preliminary figures for total production of asbestos indicates that a record high level was reached in 1953. An additional mine is to be opened at Wittenoom during 1954 and it is expected that this will increase the output by about 1,000 tons over the 1953 figure, and possibly lead to a reduction in costs.

J-M BREAKS GROUND AT TORONTO & LOMPOC

Two large projects in Johns-Manville's $18,500,000 expansion and improvement program were launched during the past month with the start of construction at Port Credit, Ontario, of a new Canadian Products Division Headquarters building, and with the breaking of ground for the new synthetic silicates plant at Lompoc, California.

The new Headquarters of the Canadian Products Division will be located on an 11 acre site on Lakeshore Road, Port Credit, which is about ten miles west of Toronto. Offices will be housed in a two story building with about 20,000 square feet of floor space. A separate building will have about 50,000 square feet of warehouse space with both railroad and truck facilities.

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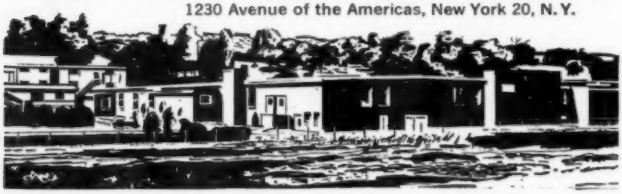

J-M APPOINTS NEW VICE PRESIDENT and Director of Engineering

George S. Smith has been appointed a Vice President of Johns-Manville Products Corporation and Director of Engineering.

In his new post, Mr. Smith succeeds C. B. Burnett who has been promoted to increased executive responsibilities.

Mr. Smith, who joined Johns-Manville in 1929 as Plant Engineer at the Alexandria, Indiana, plant, has been Chief Plant Engineer in the company's General Engineering Department with headquarters at Manville, N. J., since 1949.

ASBESTOS STOCK QUOTATIONS

(These figures are compiled from the Commercial & Financial Chronicle. No guarantee as to their correctness.)

		July 1954		
	Par	Low	High	Last
Amer. Br. Shoe (Com)	np	31¼	33¾	33¾
Amer. Br. Shoe (Pfd)	100	97¼	99¾	99¾
Armst. Ck. (Com)	np	74¼	75¼	75¼
Armst. Ck. (Pfd)	np	96¼	97⅜	96¾
Armst. Ck. (Conv. Pfd)	np	147	149	148
Asb. Corp. (Com)	np	27	28	27¾
Carey (Com)	10	19¾	22⅝	22¼
Cassiar Asb. Corp.	np	$5.75	$6.25	$6.00
Celotex (Com)	np	21¼	24½	24
Celotex (Pfd)	20	17	17⅞	17⅞
Certainteed (Com)	1	17½	19¾	19⅜
Dominion Asb. Mines	1	24⅞c	30c	27½c
Flintkote (Com)	np	33⅛	35⅜	34¾
Flintkote (Pfd)	np	99⅛	101	101
Johns-Manville (Com)	np	71½	76¾	74¾
Natl. Gypsum (Com)	1	31⅛	34¾	34¾
Natl. Gypsum (Pfd)	np	102	104	104
Pabco Products (Com)	np	17½	20⅜	20⅜
Pabco Products (Pfd)	100	85	86½	86
Ray-Man (Com)	np	42½	44¼	43½
Ruberoid (Com) New	1	36	39⅜	38½
Thermoid (Com)	1	6⅞	7¼	7¼
Thermoid (Pfd)	50	40½	42⅜	41¼
Union Asb. & Rub. (Com)	5	8⅛	8⅜	8⅜
United Asb. (Com)	1	$3.85	$4.45	$3.95
U. S. Gypsum (Com)	20	164¾	180¾	180¾
U. S. Gypsum (Pfd)	100	176½	180	179
U. S. Rubber (Com)	5	35¾	39⅜	39⅛
U. S. Rubber (Pfd)	100	146¼	150½	150

JOHNS-MANVILLE
Report for Second Quarter

Consolidated earnings of Johns-Manville Corporation and subsidiary companies for the second quarter of 1954 were $5,435,663, compared with $2,592,406 for the first quarter of this year. Earnings were $6,413,358 in the second quarter of 1953.

Sales for the second quarter of 1954 were $64,815,708, compared with $66,192,920 for the corresponding period last year.

Earnings per share of common stock were $1.71 for the second quarter this year compared with $202 for the second quarter last year.

For the year to date sales were $116,728,773 and earnings were $8,028,069 or $2.53 per share, compared with sales of $123,448,405 and earnings of $11,356,849 or $3.58 per share for the first six months last year.

CURRENT RANGE OF PRICE

As of August 10, 1954

Arizona—	**Per Ton of 2,000 lbs., f.o.b. Globe, Arizona**		
No. 1 Crude (soft)	$1,600.00	to	$1,700.00
No. 2 Crude (soft)	1,000.00	to	1,050.00
No. 3 Crude (soft)	450.00	to	500.00
Filter Fibre (soft)	250.00	to	450.00
No. 1 Crude (semi-soft)	1,200.00	to	1,500.00
No. 2 Crude (semi-soft)	900.00		
No. 3 Crude (semi-soft)	400.00		

Canada—	**Per Ton (2000 lbs.) f.o.b. Mine**		
Group No. 1 (Crude No. 1)	$1,100.00	to	$1,500.00
Group No. 2 Crude No. 2; Crude Run-of-Mine and Sundry	500.00	to	1,000.00
Group No. 3 (Spinning Fibre)	300.00	to	525.00
Group No. 4 (Shingle Fibre)	150.00	to	200.00
Group No. 5 (Paper Fibre)	100.00	to	140.00
Group No. 6 (Waste, Stucco or Plaster)			77.00
Group No. 7 (Refuse or Shorts)	35.00	to	70.00

Vermont—	**Per Ton of 2000 lbs. f.o.b. Hyde Park or Morrisville, Vt.**		
Group No. 3 (Spinning & Filtering)	$ 321.00	to	$ 348.00
Group No. 4 (Shingle Fibre)	156.00	to	173.00
Group No. 5 (Paper Fibre)	109.00	to	132.00
Group No. 6 (Waste, Stucco or Plaster)			77.00
Group No. 7 (Refuse or Shorts)	37.00	to	68.50

Imports of Asbestos by United Kingdom

Raw Materials

	June 1954 Tons (2240 lbs.)
From Union of S. Africa	2,418
Southern Rhodesia	2,964
Basutoland, Bechuanaland and Swaziland	777
Canada	4,635
Other Commonwealth Countries and the Irish Republic	282
Foreign Countries	12
	11,088

These figures were supplied by the Mining Journal Limited of London.

AVAILABLE

Substantial quantity of Anthophyllite asbestos fibre at a competitive price. Address Box 8E.W.—NY, "ASBESTOS", 808 Western Saving Fund Bldg., Phila. 7, Pa.

JOHN HOLT & COMPANY INC

17 State St. **New York 4, N. Y.**

Importers

of

South African Asbestos

Representing

JOHN HOLT & COMPANY (PTY) LTD.

JOHANNESBURG **CAPETOWN**

CAREY SEMI-ANNUAL REPORT

Report for the six months ended June 30, 1954 was issued on July 20th by the Philip Carey Mfg. Company, and gives the following figures:

Sales 1954	$25,435,363
Compared with same period in 1953	24,477,207
Net Earnings after income taxes, 1954	1,009,016
Compared with same period in 1953	1,049,534
Earnings per common share	1.21
Compared with same period in 1953	1.26

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AMERICAN BRAKE SHOE CO.
Semi-Annual Report

Net earnings for American Brake Shoe Company in the second quarter of 1954 declined to $667,400 or 43c per share of common stock compared with $1,665,450 or $1.33 per share in the first quarter of 1954. Net earnings for the first half of 1954 were $2,332,850 or $1.76 per common share compared with $2,792,847 or $2.19 a common share in the first six months of 1953.

Shipments amounted to $25,662,529 compared with $33,310,322 in the previous quarter and $38,402,075 in the second quarter of 1953. For the six months ended June 30, 1954, shipments were $58,972,851, a decline of $15,558,608 from the same period in 1953.

At June 30th, unfilled orders were $18,600,000, down $4,700,000 from the end of the first quarter. Last year at that time they amounted to $40,500,000. Orders received in the second quarter amounted to $22,051,000. This compared with $24,029,000 in the first quarter of the year and with $35,702,000 received in the second quarter of 1953.

After September 1st "ASBESTOS" will be located at 807 Western Saving Fund Building, Philadelphia 7, Pa. —Next door to our present location.

Workers employed by member companies of the National Safety Council had the safest year on record in 1953, bettering their previous record performance in 1952. They had fewer on-the-job accidents in 1953, and the ones they had were less serious.

Industrial injury rates for last year, released by the Council in advance of the 1954 edition of its annual statistical yearbook, "Accident Facts," show a substantial reduction in both frequency and severity of 1953 accidents as compared with 1952.

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F. M. S. I. SUPPORTS BRAKE DRUM SERVICE PROCEDURE

Because of its interest in greater highway safety and especially with regard to the standardized brake drum service procedure sponsored by the National Wheel and Rim Association and recommended by the service managers of the Automobile Manufacturers Association, the members of the F.M.S.I. at annual meeting in June confirmed the following:

> RESOLVED: That the Board of Directors approve the safety theme embodied in the standardization program of the National Wheel and Rim Association.

The Service Managers Group of the A.M.A. met on January 6th and they approved the recommendation that worn brake drums should not be remachined where the inside diameter of the brake drum would be increased by more than .060 inches. Ford advised that this would not apply to Lincoln and Mercury cars prior to 1952 nor to Ford cars prior to 1949 where the limitation is .030 inches inside diameter.

CAREY NOW USING SILICONES

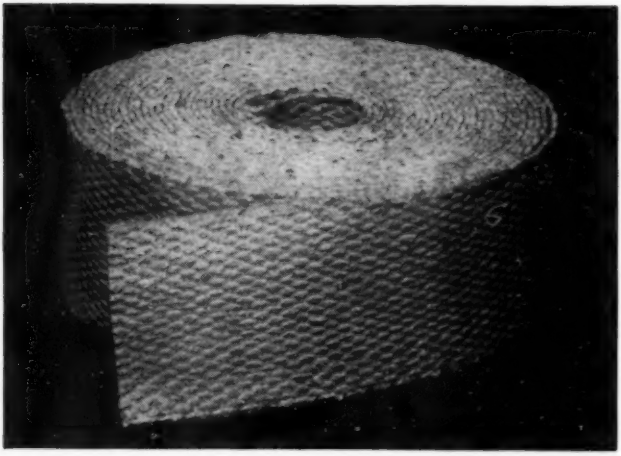
The Philip Carey Mfg. Company recently made public the news that they were now using silicones in the manufacture of siding.

The product, Careystone siding, combines the durability of asbestos cement and the beauty of four pastel shades. The new sealing process is a double one that consists of plastic and silicone coatings. The plastic coating is applied as a pre-sealer against the elements. The silicone coating consists of a high polymer resin chemically bonded to the inorganic element, silicon. It is applied as a final permanent seal against water, weather and dirt.

Complete information and samples are available by writing Dept. 7-S, The Philip Carey Mfg. Company, Cincinnati 15, Ohio.

The Spring 1954 issue of VERMONT LIFE, published by the State of Vermont, contains an interesting article, with photographs, on the Vermont Asbestos Mines. Copies may be obtained from the Vermont Development Commission, Montpelier, Vermont at a price of 35c per copy.

Oil, Water, and Flame Resistant



R/M No. 907F ASBESTOS TAPE

R/M No. 907F Asbestos Tape is an example of R/M's ability to develop an engineered product for a specific application. It is impregnated with a flexible compound that is resistant to oil, water and flame. This tape is designed primarily for the flash protection of lead sheathed cables in manholes under city streets.

RM

RAYBESTOS-MANHATTAN, INC.

ASBESTOS TEXTILE DIVISION, Manheim, Pa.

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Uniform in diameter, smooth, and with high tensile strength, Southern Asbestos Cord meets the demands of all industries such as electrical, plain and metallic hose, packing, glass, etc. It is made in various constructions according to service needs.

Southern also produces Asbestos Thread designed to individual needs. Write for Cord and Thread Folder No. 1002.

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THREAD • CLOTH • ROVING • TUBING • CARDED FIBRE
LISTING TAPE • YARNS • ROPE • WICK • OIL BURNER WICK

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